SM 3H

2017-18

# 6.6 Basic Trig. Equations

Name ________________________________________ Date ____________________ Period _____________

**Find all real numbers in terms of π that satisfy each equation.**

1. $\cos x = 0$

2. $\sin(x) + 2 = 0$

3. $\sin(x) = -1$

4. $\tan(x) = -1$

5. $\cos(x) = \frac{1}{2}$

6. $\sin(x) = \frac{\sqrt{2}}{2}$

7. $\tan(x) = \frac{1}{\sqrt{3}}$

8. $\cos(x) = \frac{-\sqrt{3}}{2}$

9. $2\sin(x) + \sqrt{2} = 0$

10. $\tan(x) + \sqrt{3} = 0$

**Find all angles in degrees that satisfy each equation.**

11. $2\cos(\alpha) - \sqrt{2} = 0$

12. $\tan(\alpha) - 1 = 0$

13. $\tan(\alpha) = -1$

14. $\sin(\alpha) = -1$

**Find all angles in the interval [0˚, 360˚] that satisfy each equation. Round approximations to the nearest tenth of a degree.**

15. $\cos(\alpha) = 0.873$

16. $\sin(\alpha) = -0.244$

17. $\tan(\alpha) = 5.42$

**Find all angles in the interval [0, 2π] that satisfy each equation. Round to the nearest hundredth.**

18. $\cos(\alpha) = 0.66$

19. $\sqrt{6}\tan(\alpha) - 1 = 0$

20. $7\sin(\alpha) - \sqrt{7} = 0$

**Solve each equation. Round to the nearest hundredth.**

21. $\dfrac{\sin\alpha}{23.4} = \dfrac{\sin 67.2°}{25.9}$ for $0° < \alpha < 90°$

22. $(3.6)^2 = (5.4)^2 + (8.2)^2 - 2(5.4)(8.2)\cos\alpha$ for $0° < \alpha > 90°$

23. Solve $t = -6\sin(m) + 2$ for $m$ where $\dfrac{-\pi}{2} \le m \le \dfrac{\pi}{2}$

24. $\dfrac{\sin 33.2°}{a} = \dfrac{\sin 45.6°}{13.7}$

**Find all real numbers in degrees that satisfy the equation. Round approximate answers to 2 decimal places.**

25. $3 = 5\sin(x) + 1$

**Find the exact value of each expression without using a calculator or table. Write both the degrees and radians.**

26. *a*) $\arcsin\left(\frac{1}{2}\right)$

b) $\cos^{-1}\left(\frac{-1}{2}\right)$

c) $\tan^{-1}(-1)$

d) $\sin\left(\frac{\pi}{3}\right)$

e) $\cos\left(\frac{-\pi}{2}\right)$

f) $\sin^{-1}(-1)$

27. A sector of a circle has a central angle of $\frac{\pi}{6}$. Find the exact area of the sector if the radius of the circle is 6 inches.